

The Claims

1. A dispensing tip for use with precision  
dispensing apparatus for delivering controlled amounts  
5 of fluid to a selected location comprising:

- 10 a) a body having an inlet at one end adapted for  
connection in fluid communication with  
precision dispensing apparatus and having an  
outlet at another end of the body;
- 15 b) a fluid conducting passage in the body for  
connecting the inlet to the outlet, the  
passage having a first portion converging in a  
direction from the inlet to an intermediate  
location in the body and a second portion of  
constant diameter extending from the  
intermediate location to the outlet; and
- 20 c) so that the passage conducts fluid from the  
inlet to the outlet in a continuous and  
uninterrupted manner.

2. A dispensing tip according to claim 1, wherein  
the second portion of the passage has a diameter in a  
range from about 0.003 inch to about 0.030 inch.

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3. A dispensing tip according to claim 1, wherein  
the body is of ceramic material.

4. A dispensing tip according to claim 1, wherein  
30 the body is of injection molded ceramic material.

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5. A dispensing tip according to claim 1, wherein the body is of injection molded zirconia ceramic material.

5        6. A dispensing tip according to claim 1, in combination with a protective housing.

7. A dispensing tip according to claim 6, further including a standoff member extending from the housing  
10 for contacting a surface to which fluid is to be dispensed for spacing the outlet of the tip from the surface.

8. A dispensing tip according to claim 1, wherein  
15 the body has a longitudinal axis and the first and second passage portions extend along the axis and wherein the diameter of a drop of fluid leaving the outlet is directly proportional to the ratio of the axial length of the second passage portion to the axial  
20 length of the first passage portion.

9. A dispensing tip for use with the precision dispensing apparatus for delivering controlled amounts of fluid to a selected location comprising:

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a) a body of ceramic material having an inlet at one end adapted for connection in fluid communication with precision dispensing apparatus and having an outlet at another end of the body; and

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b) a fluid conducting passage in the body for connecting the inlet to the outlet, the passage being shaped to conduct fluid from the

inlet to the outlet in a continuous and uninterrupted manner.

10. A dispensing tip according to claim 9, wherein  
5 the body is of injection molded ceramic material.

11. A dispensing tip according to claim 9, wherein  
the body is of injection molded zirconia ceramic  
material.

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12. A dispensing tip according to claim 9, wherein  
the outlet has a diameter in the range from about 0.003  
inch to about 0.030 inch.

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13. A method of precision dispensing controlled  
amounts of fluid to a selected location comprising:

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- a) providing a dispensing tip having an inlet for receiving fluid from precision dispensing apparatus, an outlet for discharging fluid to the location and a passage between the inlet and outlet shaped to define a continuous and uninterrupted fluid flow from the inlet to the outlet;
  - 25 b) introducing fluid to the inlet of the dispensing tip;
  - c) funnelling the flow of fluid from the inlet toward the output;
  - d) transitioning the flow to a constant cross-section flow into the outlet; and
  - 30 e) discharging the fluid from the outlet to the location in a body of fluid having a dimension

in the range from about 0.003 inch to about  
0.030 inch.

0.003 to 0.030